Prevalence Of Gastro-Intestinal Helminthes of Free-Range Chickens in Damaturu Metropolis Public Slaughter House, Yobe State

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Abstract

A total of 60 free range chickens were observed for helminthiosis at public slaughter house Damaturu, between the month of October and November 2022. Out of this 12 (20%) were positive for gastro-intestinal helminthes. The breakdown for the gastro-intestinal helminthes for the two months, are as follows: the month of October recorded the highest rate of infection 7(12%) and the least was recorded in the month of November 2022, with 5 (8%). The overall prevalence of gastro-intestinal helminthes was 12 (20%) in free range chickens, highest infection rate of nematode were recorded in both sexes. The helminthes identified from free range chickens comprised of nematode 9 (15%), cestode 5 (8.3%), trematode 7 (11.6%). The males has a higher rate of infection of 7 (12%) than females 5 (8%).

Key words: *Free-range, helminthiosis, gastro-intestinal, infection*.

Introduction

Free range poultry productions plays significant role in Nigeria in terms of economy and food security. Poultry production is divided into two main systems: Intensive/indoor and free-range/outdoor (Permin and Hansen, 2018). European countries like Portugal change the way consumer meet up with its daily production and increased awareness to them, like food quality and safety (Baptista, 2012**)**. As a result, it's necessary to develop an alternative poultry production system (Filho *et al.,* 2013), Chickens have access to outdoor environment more than poultry chickens (Lozano and Mourato, 2016). This environmental conditions exposed them to high load of parasites, by ingesting the intermediate hosts from the environment (Baptista, 2012).

Helminthes are parasites with more complex biological cycles. The intermediate hosts such as snails, earthworms and insects have high economic impact in free-range systems (Mcdougald, 2019). *Ascavidia galli* develops its action not only in the small intestine, but also in the reproductive system. Examples of clinical signs are loss of appetites, feathers, weight, anemia, and diarrhea. In more severe case, high mortality. Production conditions influence the level of infection. Disinfection of chickens is an accurate strategy to reduce the prevalence of infection by *A. galli* (Permin and Hansen, 2018). Helminths belonging to the genus capillaria can be identified inside esophagus and crop. These include species of *(Capillaria annulata and C. conterta)*, small intestine *(Caudinflata C, bursata and C. obsignata)* and caecum *(C. anatic). Capillaria conterta* and *C. annulata* are responsible for acute infections (esophagus and Crop catarrhal inflammation) and soft infections (inflammation and thickening of esophagus. and crop). Infections inside the small and large intestines, caused by *capillaria caudinflate, C. bursal C. absignata* and *C. anata.*

According to (Baptista, 2012), the central of capilariosis in chicken production starts by removing intermediate hosts, such as earthworms. In term of chemotherapy, this helminthosis can be controlled by using albendazole, ivermectin, levamisole tetramisole, mebendazole and thiabendazole (DVM, 2019). There is high consumption of free range chickens in Nigeria, especially in Damaturu metropolis. The need to assess the prevalence of helminthes parasites of chickens is necessary, the research therefore, determine the prevalence of gastro-intestinal helminthes of free range chickens in Damaturu Metropolis.

Methodology

Study area

The research study area is Public slaughter house Damaturu, Yobe State.

Sample collection

Sixty (60) gastro-intestinal track comprises of 30 male and 30 female chickens were collected at the rate of 10 samples per week between the months of October and November, 2022.

Parasitological examination

The samples of gastro-intestinal tract were collected and brought to the laboratory for further analysis. Gastro-intestinal tracts were dissected and potassium hydroxide was added, thoroughly mixed and placed on a plain slide, covered with cover slip and examined using x10 and x40 objectives lens as described by (Yazwinski and Tucker, 2016). The parasite of each gastro-intestinal tract was counted and recorded. All parasites (helmiths) observed were identified based on their morphological structure as described by (Ensuncho *et al.,* 2015). The parasites (helmiths) were preserved using 10% formaldehyde.

Result

Table 1: Prevalence of gastro-intestinal helminths observed in male free range chickens for the month of October, 2022.

Sample Date	No. of male chickens observed	No. of infected male chickens	No. of un-infected male chickens	Percentage (%) infection rate
08/10/2022	05	1	4	6.7
15/10/2022	05	0	5	00
22/10/2022	05	2	3	13.3
Total	15	3	12	20

Table 2: Prevalence of gastro-intestinal helminths observed in male free range chickens for the month of November, 2022.

Sample Date	No. of male chickens observed	No. of infected male chickens	No. of un-male chickens	Percentage (%) infection rate
08/11/2022	05	0	5	00
15/11/2022	05	3	2	6.7
22/11/2022	05	1	4	6.7
Total	15	4	11	13.3

Table 3: Prevalence of gastro-intestinal helminths observed in female free range chickens for the month of October, 2022.

Sample Date	No. of female chickens observed	No. of infected female chickens	No. of un-infected female chickens	Percentage (%) infection rate
08/10/2022	05	1	4	6.7
15/10/2022	05	0	5	00

22/10/2022	05	1	4	6.7
Total	15	2	13	13.3

Table 4: Prevalence of gastro-intestinal helminths observed in female free range chickens for the month of November, 2022.

Sample Date	No. of female chickens observed	No. of infected female chickens	No. of un-infected female	Percentage (%) infection rate
08/11/2022	05	1	4	6.7
15/11/2022	05	2	3	13.3
22/11/2022	05	0	5	00
Total	15	3	12	13.3

Table 5: Species of helminths observed in free range chickens of male and female for the month of October, 2022.

Helminth Species	Male chickens	Percentage (%) Infection rate	Female chickens	Percentage (%) infection rate
Nematode	2	9.5	3	14.2
Cestode	1	4.7	1	4.7
Trematode	2	9.5	2	9.5
Total	5	23.7	6	28.4

Table 6: Species of helminths observed in free range chickens of male and female for the month of November, 2022.

Helminth Species	Male chickens	Percentage (%) Infection rate	Female chickens	Percentage (%) infection rate
Nematode	2	9.5	2	9.5
Cestode	2	9.5	1	4.7
Trematode	2	9.5	1	4.7

Total	6	28.5	4	18.9

Data Analysis

The data obtained from this research work was analyzed using descriptive statistics. Percentage was used to determine the prevalence of helminthes.

Discussion

Out of 60 samples observed in the months of October and November 2022, only twelve 12 (20%) were infected with helminthes parasite. The result indicate that the month of October recorded the highest rate of infection with helminthes 7 (12%) and the least rate of infection was recorded in the month of November 5 (8%). The result also shows that Nematodes recorded the highest rate with 9 (15%), followed by trematodes 7 (11.6%) and the least was found among the cestodes 5 (8.3%) respectively. This agreed with the statement of Chalchisa and Derossa, (2016) that nematodes were found abundantly during rainy season, when compared with other species of helminthes. Males had the highest rate of infection 7 (11.6) than the females 5 (8.3%). This shows that the highest rate of infection in the October may be due to rainfall and as a result of accumulation of feacal materials. This are some of the factors attributed to the high rate of infection in males than in females. It was also observed that males are more infected than the females due to the fact that males feed more on grasses than females, whereby the intermediate host are found attached to the grasses.

Helminthes is the major parasite disease of free-range chickens with substantial economic losses. Baptista, *et, al.* (2012), observed in Imo state that free range male chickens were more infected than the females. Because the male chickens were mostly found roaming about more often than the females.

Conclusion

This research had come up with moderate prevalence of cestode and nematode helminthes infection, the free range chickens in the study area were infected with one or more helminthes spp. Finding from this research provide information that will assist in improving the poultry sector in Yobe State, Nigeria in general, for better production and profitability.

Recommendations

1. Public enlightenment on personal hygiene and control through proper vaccination with live attenuated vaccine.
2. Free range chickens should only be treated in cases of several infection that show clinical signs.
3. Few drugs are available for treatment of chickens and other poultry, drugs such as amprolium or toltrazuril should be used for treatment of the infected free range chickens.

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